Popuniti odmah!

IME I PREZIME: NIKOLA KNEŽEVIĆ **BROJ INDEKSA:** 17 - 1 - 0002 - 2010

DATUM: VRIJEME: OD DO

MATEMATIKA 1: Trajanje 100 minuta. Ispit se održava sukladno objavljenim pravilima. Na snazi je Pravilnik o stegovnoj odgovornosti studenata.

xooxo
Broj ↓ bodova
45

1. Da li postoji i ako postoji koji je inverz dane matrice? Ako postoji inverz provjeriti da je dobro izračunat matričnim množenjem.

$$A = \begin{bmatrix} 1 & 0 & 0 & 2 \\ 0 & 2 & 1 & 0 \\ 0 & 1 & 2 & 0 \\ 2 & 0 & 0 & 1 \end{bmatrix}.$$

20

2. Pronaći sve kompleksne brojeve z takve da je $z^3 + |3 + 4i| = \frac{5}{i}$.

3. Odrediti domenu i sve asimptote funkcije $f(x) = \ln(2 - 3x)$.

4. Ispitati periodičnost, (ne)parnost i drugu derivaciju funkcije $g(x) = \sin(2x)$.

10

5. Na temelju ispitivanja toka funkcije napraviti skicu grafa funkcije $h(x) = x - \sqrt{x^2 - 1}$.

15

1.

$$\left[\begin{array}{cccc|cccc} 1&0&0&2&1&0&0&0 \\ 0&2&1&0&0&1&0&0 \\ 0&1&2&0&0&0&1&0 \\ 2&0&0&1&0&0&0&1 \end{array}\right] \cdot(-2) \sim \left[\begin{array}{cccc|cccc} 1&0&0&2&1&0&0&0 \\ 0&2&1&0&0&1&0&0 \\ 0&1&2&0&0&0&1&0 \\ 0&0&0&-3&-2&0&0&1 \end{array}\right] (-1) \sim$$

$$\sim \left[\begin{array}{cccc|cccc} 1&0&0&2&1&0&0&0 \\ 0&1&-1&0&0&1&-1&0 \\ 0&1&2&0&0&0&1&0 \\ 0&0&0&-3&-2&0&0&1 \end{array}\right] (-1) \sim \left[\begin{array}{cccc|cccc} 1&0&0&2&1&0&0&0 \\ 0&1&-1&0&0&1&-1&0 \\ 0&0&3&0&0&-1&2&0 \\ 0&0&0&3&2&0&0&1 \end{array}\right] \cdot\frac{1}{3} \sim$$

$$\sim \left[\begin{array}{cccc|cccc} 1&0&0&2&1&0&0&0 \\ 0&1&-1&0&0&1&-1&0 \\ 0&0&1&0&0&-\frac{1}{3}&\frac{2}{3}&0 \\ 0&0&0&-3&-2&0&0&-\frac{1}{3} \end{array}\right] \cdot\frac{-1}{3} \sim \left[\begin{array}{cccc|cccc} 1&0&0&2&1&0&0&\frac{2}{3} \\ 0&1&0&0&0&\frac{2}{3}&-\frac{1}{3}&0 \\ 0&0&1&0&0&-\frac{1}{3}&\frac{2}{3}&0 \\ 0&0&0&1&\frac{2}{3}&0&0&-\frac{1}{3} \end{array}\right] (-2) \sim$$

$$\sim \left[\begin{array}{cccc|cccc} 1&0&0&0&-\frac{1}{3}&0&0&\frac{2}{3} \\ 0&1&0&0&0&\frac{2}{3}&-\frac{1}{3}&0 \\ 0&0&1&0&0&-\frac{1}{3}&\frac{2}{3}&0 \\ 0&0&0&1&\frac{2}{3}&0&0&-\frac{1}{3} \end{array}\right] = A^{-1}$$

IME I PREZIME: NIKOLA KNEŽEVIĆ BROJ INDEKSA:

A

PROVJERA

$$\begin{bmatrix} 1 & 0 & 0 & 2 \\ 0 & 2 & 1 & 0 \\ 0 & 1 & 2 & 0 \\ 2 & 0 & 0 & 1 \end{bmatrix} \cdot \begin{bmatrix} -\frac{1}{3} & 0 & 0 & \frac{2}{3} \\ 0 & \frac{2}{3} & -\frac{1}{3} & 0 \\ 0 & -\frac{1}{3} & \frac{2}{3} & 0 \\ \frac{2}{3} & 0 & 0 & -\frac{1}{3} \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

√

20

$a_{11} = -\frac{1}{3} + \frac{4}{3} = \frac{3}{3} = 1$

$a_{12} = 0$

$a_{13} = 0$

$a_{14} = \frac{2}{3} - \frac{2}{3} = 0$

$a_{21} = 0$

$a_{22} = \frac{4}{3} - \frac{1}{3} = 1$

$a_{23} = -\frac{2}{3} + \frac{2}{3} = 0$

$a_{24} = 0$

$a_{31} = 0$

$a_{32} = \frac{2}{3} - \frac{2}{3} = 0$

$a_{33} = -\frac{1}{3} + \frac{4}{3} = 1$

$a_{34} = 0$

$a_{41} = -\frac{2}{3} + \frac{2}{3} = 0$

$a_{42} = 0$

$a_{43} = 0$

$a_{44} = \frac{4}{3} - \frac{1}{3} = 1$

IME I PREZIME: NIKOLA KNEŽEVIĆ BROJ INDEKSA:

4. $g'(x) = [\sin(2x)]'$

$= \cos(2x) \cdot (2x)'$

$= \cos(2x) \cdot (2' \cdot x + 2 \cdot x')$

$= \cos(2x) \cdot 2$

$= 2\cos(2x)$

$(g'(x))' = [2\cos(2x)]'$

$= 2[\cos(2x)]'$

$= 2 \cdot [-\sin(2x) \cdot 2]$

$g''(x) = 2 \cdot [-2\sin(2x)]$ ✓ 10

FUNKCIJA JE PERIODIČNA

PERIOD JE 2π ✗

NEPARNA JE ZAŠTO?

IME I PREZIME: NIKOLA KVEŽEVIĆ BROJ INDEKSA:

(3) $h(x) = x - \sqrt{x^2-1} \quad [\infty - \infty]$

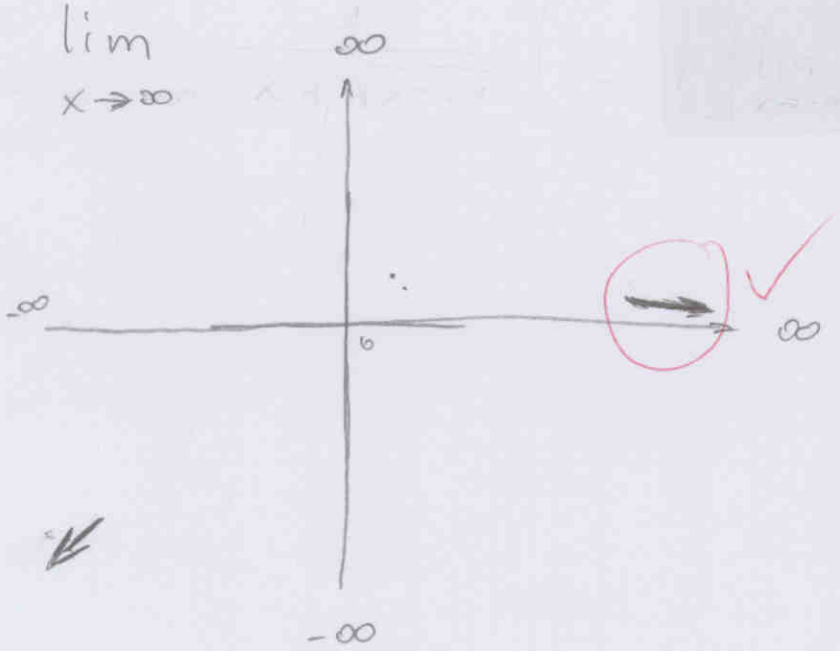
$$\lim_{x\to\infty} x - \sqrt{x^2-1} = \lim_{x\to\infty} x - \sqrt{x^2-1} \cdot \frac{x+\sqrt{x^2-1}}{x+\sqrt{x^2-1}} =$$

$$\lim_{x\to\infty} \frac{x^2 + \sqrt{x^4-x^2} - \sqrt{x^4-x^2} - (x^2-1)}{x+\sqrt{x^2-1}} =$$

$$\lim_{x\to\infty} \frac{x^2 - x^2 + 1}{x+\sqrt{x^2-1}} = \lim_{x\to\infty} \frac{1}{x+\sqrt{x^2-1}} \quad \left[\frac{1}{\infty+\infty}\right] \lim_{x\to\infty} = 0 \checkmark$$

$$\lim_{x\to-\infty} x - \sqrt{x^2-1} = \lim_{x\to\infty} -x - \sqrt{(-x)^2-1} \quad [-\infty - \infty] \lim_{x\to-\infty} \checkmark$$

$\lim_{x\to\infty}$

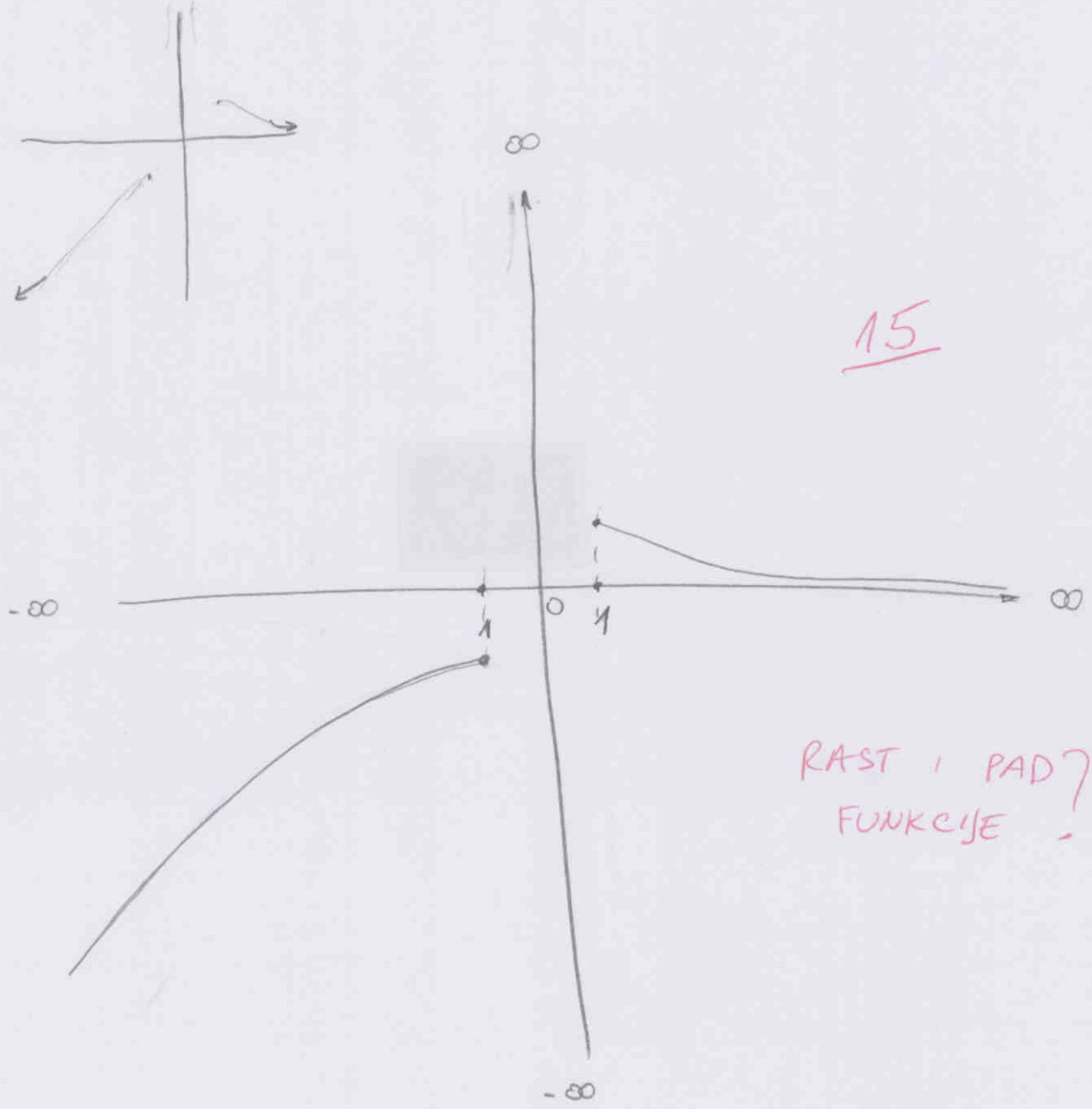


LIJEVA KOSA ASIMPTOTA?

IME I PREZIME: NIKOLA KNEŽEVIĆ BROJ INDEKSA:

$\lim_{x \to 1} x - \sqrt{x^2 - 1}$ $[1 - 0]$ $\lim = 1$ ✓

$\lim_{x \to -1+} x - \sqrt{x^2 - 1}$ $[-1 - 0]$ $\lim = -1$ ✓



15

RAST I PAD FUNKCIJE!

Popuniti odmah!

IME I PREZIME: Denis Ilić **BROJ INDEKSA:** 5619-2008

DATUM: VRIJEME: OD DO

MATEMATIKA 1: Trajanje 100 minuta. Ispit se održava sukladno objavljenim pravilima. Na snazi je Pravilnik o stegovnoj odgovornosti studenata.

xooxx
Broj ↓ bodova

0

1. Odrediti determinantu matrice $A = \begin{bmatrix} 1 & 2 & 0 & 0 \\ 2 & 1 & 2 & 0 \\ 0 & 2 & 1 & 2 \\ 0 & 0 & 2 & 1 \end{bmatrix}$

2. Odrediti domenu i sve asimptote funkcije $f(x) = x - \sqrt{x^2 - x}$

3. Ispitati konvergenciju reda $\sum \left(\frac{3n+3}{\frac{1}{n} + 2n} \right)^n$

4. Ispitati domenu, (ne)parnost i drugu derivaciju funkcije $g(x) = \ln(x^2 + 1)$.

5. Na temelju ispitivanja toka funkcije napraviti skicu grafa funkcije $h(x) = \frac{x^2 - 1}{x^2 + 1}$.

(1)

$$A = \begin{bmatrix} 1 & 2 & 0 & 0 \\ 2 & 1 & 2 & 0 \\ 0 & 2 & 1 & 2 \\ 0 & 0 & 2 & 1 \end{bmatrix}$$

Popuniti odmah!
IME I PREZIME: VEDRAN DEČAS **BROJ INDEKSA:**

DATUM: VRIJEME: OD DO

xoxoo

MATEMATIKA 1: Trajanje 100 minuta. Ispit se održava sukladno objavljenim pravilima. Na snazi je Pravilnik o stegovnoj odgovornosti studenata.

Broj ↓ bodova

1. Pravac p prolazi točkama A i B, a pravac q točkama A i C. Koliko iznosi kut između pravaca $\measuredangle(p,q)$ ako je $A(2,-2,1)$, $B(-1,2,-3)$ i $C(1,-1,-2)$?

2. Među kompleksnim brojevima riješiti jednadžbu: $z^3 - \overline{(i-1)}^2 = 0$.

3. Odrediti sve asimptote funkcije $f(x) = \arctan(e^x)$.

4. Odrediti drugu derivaciju funkcije $g(x) = \ln\left(\frac{1}{x} - x\right)$.

5. Na temelju ispitivanja toka funkcije napraviti skicu grafa funkcije $f(x) = \frac{x^2+1}{x+1}$.

(5) $f(x) = \frac{x^2+1}{x+1}$

1° DOMENA

$V: \; x+1=0$

$x=-1$

$D_f(x),\ x \in \mathbb{R} \setminus \{-1\}$ ✓

2° NULTOČKE

$x^2+1=0$

$x^2=-1$ // NEMA NULTOČAKA ✓

3° PARNOST

$f(x) = f(-x)$

$f(-x) = \frac{(-x)^2+1}{-x+1} = \frac{x^2+1}{-x+1} = -\frac{x^2+1}{x-1}$ → NITI PARAN, NITI NEPARAN ✓

4° VERTIKALNA ASIMPTOTA

$f(x) \lim_{x\to -1} \frac{x^2+1}{x+1} = \lim_{x\to -1} \frac{(-1)^2+1}{-1+1} = \frac{1+1}{-1+1} = \frac{2}{0} = \infty$ NEMA ASIMP. ✗ V.A. $x=-1$

HORIZONTALNA ASIMPTOTA

$f(x) \lim_{x\to\infty} \frac{x^2+1}{x+1} \cdot \frac{\frac{1}{x^2}}{\frac{1}{x^2}} = \frac{1+0}{0\,0} = \frac{1}{0}$ ∞ NEMA ASIMPT ✓

KOSA ASIMPTOTA

$y = kx + l$

$k = \lim_{x\to\infty} \frac{f(x)}{x}$ ✗

$l = \lim_{x\to\infty} [f(x) - kx]$

$k = \lim_{x\to\infty} \frac{(x^2+1)'}{x} = \frac{2x}{x} = 2$ ✗

$l = \lim_{x\to\infty} \left[\frac{x^2+1}{x+1} - 2x\right] = \lim_{x\to\infty} \left(\frac{x^2+1-2x(x+1)}{x+1}\right)$

$l = \lim_{x\to\infty} \left[\frac{x^2+1-2x^2-2x}{x+1}\right] = \frac{-x^2-2x+1}{x+1}$ ✗

IME I PREZIME: VEDRAN DEČKO

BROJ INDEKSA:

$$f(x) = \frac{x^2+1}{x+1} \quad u \quad v$$

$$f'(x) = \frac{(x^2+1)' \cdot (x+1) - (x^2+1)(x+1)'}{(x+1)^2}$$

$$f'(x) = \frac{2x(x+1) - (x^2+1)}{(x+1)^2}$$

$$f'(x) = \frac{2x^2+2x-x^2-1}{(x+1)^2}$$

$$f'(x) = \frac{x^2+2x-1}{(x+1)^2}$$

$$f'(x) = \frac{x^2+2x-1}{(x+1)^2} \quad u \quad v$$

$$f''(x) = \frac{(x^2+2x-1)' \cdot (x+1)^2 - (x^2+2x-1)(x+1)^2)'}{(x+1)^4}$$

$$f''(x) = \frac{2x+2 \cdot (x+1)^2 - (x^2+2x-1) 2(x+1)(x+1)'}{(x+1)^4}$$

$$f''(x) = \frac{2x+2 \cdot (x+1)^2 - (x^2+2x-1) 2x+2}{(x+1)^4}$$

$$f''(x) = \frac{2x+2-2x^3-4x^2+2x+2}{(x+1)^2}$$

$f''(x) =$

U ZADATKU SE BODUJE GRAF!!!

$a=1$
$b=2$
$c=-1$

$$x_{1/2} = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$$

$$x_{1/2} = \frac{-2 \pm \sqrt{2^2-4 \cdot 1 \cdot (-1)}}{2}$$

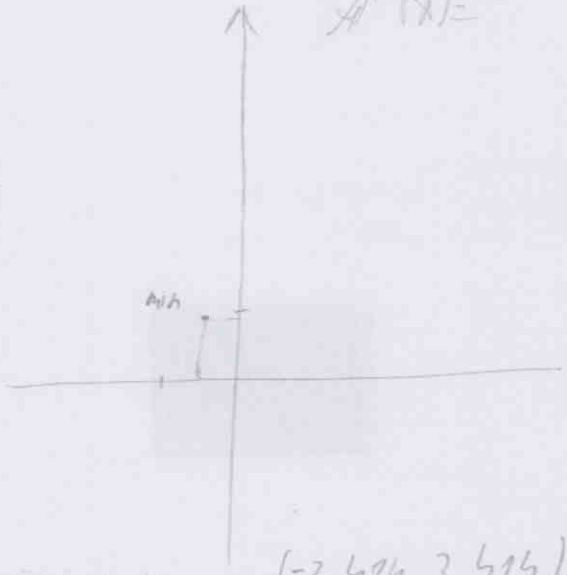
$$x_{1/2} = \frac{-2 \pm \sqrt{4+4}}{2}$$

$$x_{1/2} = \frac{-2 \pm \sqrt{8}}{2}$$

$$x_{1/2} = \frac{-2 \pm 2\sqrt{2}}{2}$$

$$x_1 = \frac{-2-2\sqrt{2}}{2} = -2.414$$

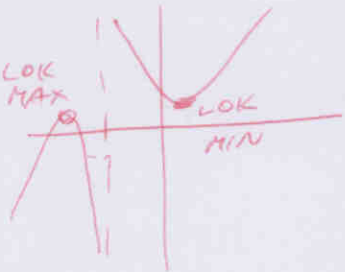
$$x_2 = \frac{-2+2\sqrt{2}}{2} = 0.414$$



(-2.414, 3.414)

(0.414, 0.828)

SKICA GRAFA



JTAČI OLDRED TOČKE

	$-\infty$	$\frac{-2-2\sqrt{2}}{2}$	-1	$\frac{-2+2\sqrt{2}}{2}$	$+\infty$
f'		$-$	$+$	$-$	$+$
$f(x)$		↘	↗	↘	↗
		min			

X

min (0.414, 0.828)

IME I PREZIME: VODREN DŽEKIĆ BROJ INDEKSA:

(5) $g(x) = \ln\left|\frac{1}{x} - x\right|$

$g'(x) = \frac{1}{\left|\frac{1}{x} - x\right|} \cdot \left(\frac{1}{x} - x\right)'$ ✓

$g'(x) = \frac{1}{\frac{1}{x} - x} \cdot [-1]$ ✗

$g'(x) = -\frac{1}{\frac{1}{x} - x}$

$g''(x) = -\frac{1' \cdot \left|\frac{1}{x} - x\right| - 1\left|\frac{1}{x} - x\right|'}{\left|\frac{1}{x} - x\right|^2}$

$g''(x) = -\frac{1}{\left|\frac{1}{x} - x\right|^2}$

$g'(x) = \frac{1}{\frac{1}{x} - x} \cdot \left(-\frac{1}{x^2} - 1\right)$

(3) $d(x) = \arctan|e^x|$

$e^x \neq 0$

$-1 \leq e^x \leq 1$

$e^x \leq 1$

$-1 \leq e^x$

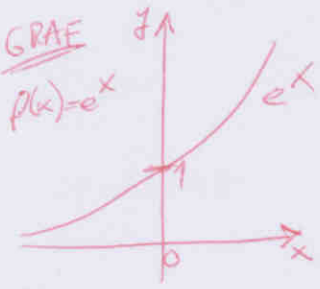
$-e^x \leq 1 \quad /\cdot(-1)$

$e^x \geq -1$

$d(x)$ ...

GRAF

$f(x) = e^x$



$\Rightarrow e^x > 0, \forall x \in \mathbb{R}$

$\Rightarrow e^x \neq 0, \forall x \in \mathbb{R}$

Popuniti odmah!

IME I PREZIME: JOSIP UTKOVIĆ **BROJ INDEKSA:** 52471

DATUM: 01.09.2011 VRIJEME: OD DO

MATEMATIKA 1: Trajanje 100 minuta. Ispit se održava sukladno objavljenim pravilima. Na snazi je Pravilnik o stegovnoj odgovornosti studenata.

xoxox

Broj ↓ bodova

0

1. Odrediti determinantu matrice $A = \begin{bmatrix} 0 & 2 & 0 & 0 \\ 2 & 0 & 2 & 0 \\ 0 & 2 & 0 & 1 \\ 0 & 0 & 2 & 0 \end{bmatrix}$

2. Ispitati konvergenciju reda $\sum \left(\frac{n+2}{n+1} \right)^n$

3. Ispitati sve asimptote funkcije $f(x) = \frac{1-x^2}{2x^2 - x - 3}$.

4. Odrediti domenu i prvu derivaciju funkcije $g(x) = x + \sqrt{1-x^2}$.

5. Na temelju ispitivanja toka funkcije napraviti skicu grafa funkcije g iz zadatka 4. Posebno odgovoriti da li je funkcija ograničena.

Popuniti odmah!

IME I PREZIME: TONI MIKA **BROJ INDEKSA:**

DATUM: VRIJEME: OD DO

MATEMATIKA 1: Trajanje 100 minuta. Ispit se održava sukladno objavljenim pravilima. Na snazi je Pravilnik o stegovnoj odgovornosti studenata.

8

xoxxo

Broj ↓ bodova

1. Koja je definicija inverza matrice? Izračunati inverz dane matrice (ako postoji) i provjeriti relaciju iz definicije.

$$A = \begin{bmatrix} 0 & 1 & 0 & -1 \\ 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & 1 \\ -1 & 0 & 1 & 0 \end{bmatrix}$$

2. Ako su z_1 i z_2 rjesenja kvadratne jednadzbe $z^2 - 2z + 2 = 0$, izracunati: $\overline{\left(\frac{z_1 - z_2}{z_2 - 2}\right)}$ i $Re\left(\overline{\left(\frac{z_2}{z_1}\right)}\right)$..

3. Zadana je funkcija $f(x) = e^{-x^2}$. Odrediti domenu, prvu derivaciju i sve asimptote funkcije.

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4. Ispitati periodičnost, (ne)parnost i drugu derivaciju funkcije $g(x) = \cos(3x)$.

5. Na temelju ispitivanja toka napraviti skicu grafa funkcije $h(x) = x - \frac{1}{x+1}$.

1)

$$A = \begin{bmatrix} 0 & 1 & 0 & -1 \\ 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & 1 \\ -1 & 0 & 1 & 0 \end{bmatrix}$$

$$\det A = \begin{vmatrix} 0 & 1 & 0 & -1 \\ 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & 1 \\ -1 & 0 & 1 & 0 \end{vmatrix} \quad III_r - I_r = \begin{vmatrix} 0 & 1 & 0 & -1 \\ 1 & 0 & 1 & 0 \\ 0 & 0 & 0 & 2 \\ -1 & 0 & 1 & 0 \end{vmatrix} =$$

$$= 0 - 2 + 0 - 0 - 2 - 0 = -4$$

Ima inverz

$$A = \left|\begin{array}{cccc|cccc} 0 & 1 & 0 & -1 & 1 & 0 & 0 & 0 \\ 1 & 0 & 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 1 & 0 & 0 & 1 & 0 \\ -1 & 0 & 1 & 0 & 0 & 0 & 0 & 1 \end{array}\right| \cdot 1 + \quad = \left|\begin{array}{cccc|cccc} 1 & 1 & 1 & -1 & 1 & 1 & 0 & 0 \\ 1 & 0 & 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 1 & 0 & 0 & 1 & 0 \\ -1 & 0 & 1 & 0 & 0 & 0 & 0 & 1 \end{array}\right| \begin{array}{l} + \\ \cdot(-1) \\ \\ + \end{array} =$$

$$= \left|\begin{array}{cccc|cccc} 1 & 1 & 1 & -1 & 1 & 1 & 0 & 0 \\ 0 & 1 & 0 & -1 & 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & 1 & 2 & -1 & 1 & 1 & 0 & 1 \end{array}\right| \begin{array}{l} \\ \cdot(-1)+ \\ \cdot(-1) + \\ \end{array} = \left|\begin{array}{cccc|cccc} 1 & 1 & 1 & -1 & 1 & 1 & 0 & 0 \\ 0 & 1 & 0 & -1 & 1 & 0 & -1 & 0 \\ 0 & 0 & 0 & -2 & 1 & 0 & 1 & 0 \\ 0 & 0 & 2 & -2 & 0 & -1 & 0 & -1 \end{array}\right| \begin{array}{l} \\ \cdot(-1) \\ \\ \end{array}$$

IME I PREZIME: Toni Mikić

BROJ INDEKSA:

$$A = \left|\begin{array}{cccc:cccc} 1 & 0 & 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & -1 & 1 & 1 & 0 & 0 \\ 0 & 0 & 0 & -2 & 1 & 1 & -1 & 0 \\ 0 & 0 & -2 & -2 & 0 & -1 & 0 & -1 \end{array}\right| \cdot\left(-\frac{1}{2}\right) = \left|\begin{array}{cccc:cccc} 1 & 0 & 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & -1 & 1 & 1 & 0 & 0 \\ 0 & 0 & 0 & -2 & 1 & 1 & -1 & 0 \\ 0 & 0 & 1 & 1 & 0 & \frac{1}{2} & 0 & \frac{1}{2} \end{array}\right| \begin{array}{l} \\ \\ \\ \cdot 1 \end{array} \begin{array}{l} \\ \\ \\ + \end{array} =$$

$$= \left|\begin{array}{cccc:cccc} 1 & 0 & 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & -1 & 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & -1 & 1 & \frac{3}{2} & -1 & \frac{1}{2} \\ 0 & 0 & 1 & 1 & 0 & \frac{1}{2} & 0 & \frac{1}{2} \end{array}\right| \begin{array}{l} \\ \\ \\ + \end{array} = \left|\begin{array}{cccc:cccc} 1 & 0 & 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & -1 & 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & -1 & 1 & \frac{3}{2} & -1 & \frac{1}{2} \\ 0 & 0 & 0 & -2 & 1 & 1 & -1 & 0 \end{array}\right| \cdot\left(-\frac{1}{2}\right)$$

$$= \left|\begin{array}{cccc:cccc} 1 & 0 & 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & -1 & 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & -1 & 1 & \frac{3}{2} & -1 & \frac{1}{2} \\ 0 & 0 & 0 & 1 & -\frac{1}{2} & \frac{1}{2} & \frac{1}{2} & 0 \end{array}\right| \begin{array}{l} \\ + \\ = \\ + \end{array} = \left|\begin{array}{cccc:cccc} 1 & 0 & 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & \frac{1}{2} & \frac{1}{2} & \frac{1}{2} & 0 \\ 0 & 0 & 1 & 0 & \frac{1}{2} & 1 & -\frac{1}{2} & \frac{1}{2} \\ 0 & 0 & 0 & 1 & -\frac{1}{2} & \frac{1}{2} & \frac{1}{2} & 0 \end{array}\right| \begin{array}{l} + \\ \\ \\ \cdot(-1) \end{array}$$

$$= \left|\begin{array}{cccc:cccc} 1 & 0 & 0 & 0 & -\frac{1}{2} & 0 & \frac{1}{2} & -\frac{1}{2} \\ 0 & 1 & 0 & 0 & \frac{1}{2} & \frac{1}{2} & \frac{1}{2} & 0 \\ 0 & 0 & 1 & 0 & \frac{1}{2} & 1 & -\frac{1}{2} & \frac{1}{2} \\ 0 & 0 & 0 & 1 & -\frac{1}{2} & \frac{1}{2} & \frac{1}{2} & 0 \end{array}\right| \times$$

A^{-1}

$$A \cdot A^{-1} = \left|\begin{array}{cccc} 0 & 1 & 0 & -1 \\ 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & 1 \\ -1 & 0 & 1 & 0 \end{array}\right| \cdot \left|\begin{array}{ccc} -\frac{1}{2} & 0 & \frac{1}{2} & -\frac{1}{2} \\ \frac{1}{2} & \frac{1}{2} & \frac{1}{2} & 0 \\ \frac{1}{2} & 1 & -\frac{1}{2} & \frac{1}{2} \\ -\frac{1}{2} & \frac{1}{2} & \frac{1}{2} & 0 \end{array}\right| = \left[\begin{array}{cccc} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 1 & 1 & 0 \\ 0 & 1 & 1 & 1 \end{array}\right] \neq \left[\begin{array}{cccc} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]$$

$\times$

IME I PREZIME: Toni Mik

BROJ INDEKSA:

1) $0\cdot\left(-\frac{1}{2}\right)+1\cdot\frac{1}{2}+0\cdot\frac{1}{2}-1\cdot\left(-\frac{1}{2}\right)=\frac{1}{2}+\frac{1}{2}=1$ //

$0\cdot 0+1\cdot\frac{1}{2}+0\cdot 1-1\cdot\frac{1}{2}=\frac{1}{2}-\frac{1}{2}=0$

$0\cdot\frac{1}{2}+1\cdot\frac{1}{2}+0\cdot\left(-\frac{1}{2}\right)-1\cdot\left(\frac{1}{2}\right)=\frac{1}{2}-\frac{1}{2}=0$

$0\cdot\left(-\frac{1}{2}\right)+1\cdot 0+0\cdot\frac{1}{2}+1\cdot 0=0$ //

1	0	0	0
0	1	0	0
0	0	1	0
0	0	0	1

X

2) $1\cdot\left(-\frac{1}{2}\right)+0\cdot\frac{1}{2}+1\cdot\frac{1}{2}+0\cdot\left(-\frac{1}{2}\right)=-\frac{1}{2}+\frac{1}{2}=0$

$1\cdot 0+0\cdot\frac{1}{2}+1\cdot 1+0\cdot\frac{1}{2}=1$ //

$1\cdot\frac{1}{2}+0\cdot\frac{1}{2}+1\cdot\left(-\frac{1}{2}\right)+0\cdot\frac{1}{2}=\frac{1}{2}-\frac{1}{2}=0$

$1\cdot\left(-\frac{1}{2}\right)+0\cdot 0+1\cdot\frac{1}{2}+0\cdot 0=-\frac{1}{2}+\frac{1}{2}=0$

3) $0\cdot\left(-\frac{1}{2}\right)+1\cdot\frac{1}{2}+0\cdot\frac{1}{2}+1\cdot\left(-\frac{1}{2}\right)=\frac{1}{2}-\frac{1}{2}=0$

$0\cdot 0+1\cdot\frac{1}{2}+0\cdot 1+1\cdot\frac{-1}{2}=0$

$0\cdot\frac{1}{2}+1\cdot\frac{1}{2}+0\cdot\left(-\frac{1}{2}\right)+1\cdot\frac{1}{2}=1$

$0\cdot\left(-\frac{1}{2}\right)+1\cdot 0+0\cdot\frac{1}{2}+1\cdot 0=0$

4) $-1\cdot\left(-\frac{1}{2}\right)+0\cdot\left(\frac{1}{2}\right)+1\cdot\frac{1}{2}+0\cdot\left(-\frac{1}{2}\right)=0$

$-1\cdot 0+0\cdot\frac{1}{2}+1\cdot 1+0\cdot\frac{1}{2}=0$

$-1\cdot\frac{1}{2}+0\cdot\frac{1}{2}+1\cdot\left(\frac{1}{2}\right)+0\cdot\frac{1}{2}=-\frac{1}{2}+\frac{1}{2}=0$

$-1\cdot\left(-\frac{1}{2}\right)+0\cdot 0+1\cdot\frac{1}{2}+0\cdot 0=\frac{1}{2}+\frac{1}{2}=1$

IME I PREZIME: TONI MIKA BROJ INDEKSA:

3) $f(x) = e^{-x^2}$

$f(x)' = e^{-x^2} \cdot (-2x)$ ✓

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4) $g(x) = \cos(3x)$

$g(x)' = -\sin(3x) \cdot 3$

DRUGA DERIVACIJA?

1)

$$A = \begin{bmatrix} 0 & 1 & 0 & -1 \\ 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & 1 \\ -1 & 0 & 1 & 0 \end{bmatrix}$$

$$\det A = \begin{vmatrix} 0 & 1 & 0 & -1 \\ 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & 1 \\ -1 & 0 & 1 & 0 \end{vmatrix} \quad \text{III}_L - \text{I}_L = \begin{vmatrix} 0 & 1 & 0 & -1 \\ 1 & 0 & 1 & 0 \\ 0 & 0 & 0 & 2 \\ -1 & 0 & 1 & 0 \end{vmatrix}$$

$$\det A = \begin{vmatrix} 0 & 1 & 0 & -1 \\ 1 & 0 & 1 & 0 \\ 0 & 0 & 0 & 2 \\ -1 & 0 & 1 & 0 \end{vmatrix} = 0 + 2 + 0 - 0 - 2 - 0$$

$= -4$ Ima inverz

$$A = \left|\begin{array}{cccc|cccc} 0 & 1 & 0 & -1 & 1 & 0 & 0 & 0 \\ 1 & 0 & 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 1 & 0 & 0 & 1 & 0 \\ -1 & 0 & 1 & 0 & 0 & 0 & 0 & 1 \end{array}\right| \begin{array}{l} \leftarrow + \\ \cdot 1 \end{array} = \left|\begin{array}{cccc|cccc} 1 & 1 & 1 & -1 & 1 & 2 & 0 & 0 \\ 1 & 0 & 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 1 & 0 & 0 & 1 & 0 \\ -1 & 0 & 1 & 0 & 0 & 0 & 0 & 1 \end{array}\right| \begin{array}{l} + \\ \cdot(-1) \leftarrow \\ \\ \\ + \end{array}$$

$$= \left|\begin{array}{cccc|cccc} 1 & 1 & 1 & -1 & 1 & 2 & 0 & 0 \\ 0 & 1 & 0 & -1 & 1 & 1 & 0 & 0 \\ 0 & 1 & 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & 1 & 2 & -1 & 1 & 2 & 0 & 1 \end{array}\right| \begin{array}{l} \\ \\ \cdot(-1) \leftarrow + \\ \cdot(-1) \end{array} = \left|\begin{array}{cccc|cccc} 1 & 1 & 1 & -1 & 1 & 2 & 0 & 0 \\ 0 & 1 & 0 & -1 & 1 & 1 & 0 & 0 \\ 0 & 0 & 0 & -2 & 1 & 1 & -1 & 0 \\ 0 & 0 & -2 & -2 & 0 & -1 & 0 & -1 \end{array}\right| \begin{array}{l} \leftarrow + \\ \cdot(-1) \\ = \end{array}$$

IME I PREZIME: Toni Mika

BROJ INDEKSA:

$$A: \left|\begin{array}{cccc|cccc} 1 & 0 & 1 & 0 & 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & -1 & 1 & 0 & -1 & 0 \\ 0 & 0 & 0 & -2 & 1 & 0 & -1 & 0 \\ 0 & 0 & -1 & 1 & 0 & -\frac{1}{2} & 0 & -\frac{1}{2} \end{array}\right| \cdot\left(-\frac{1}{2}\right) = \left|\begin{array}{cccc|cccc} 1 & 0 & 1 & 0 & 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & -1 & 1 & 0 & -1 & 0 \\ 0 & 0 & 0 & -2 & 1 & 0 & -1 & 0 \\ 0 & 0 & -1 & 1 & 0 & \frac{1}{2} & 0 & \frac{1}{2} \end{array}\right| \cdot(-1)$$

$$= \left|\begin{array}{cccc|cccc} 1 & 0 & 1 & 0 & 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & -1 & 1 & 0 & -1 & 0 \\ 0 & 0 & 1 & -3 & 1 & -\frac{1}{2} & 1 & -\frac{1}{2} \\ 0 & 0 & -1 & 1 & 0 & \frac{1}{2} & 0 & \frac{1}{2} \end{array}\right| \cdot(-3) = \left|\begin{array}{cccc|cccc} 1 & 0 & 1 & 0 & 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & -1 & 1 & 0 & -1 & 0 \\ 0 & 0 & 1 & -3 & 1 & -\frac{1}{2} & 1 & -\frac{1}{2} \\ 0 & 0 & 0 & -2 & 1 & 0 & 1 & 0 \end{array}\right| \cdot\left(-\frac{1}{2}\right)$$

$$= \left|\begin{array}{cccc|cccc} 1 & 0 & 1 & 0 & 1 & 0 & \frac{1}{2} & 0 \\ 0 & 1 & 0 & -1 & 1 & 0 & -1 & 0 \\ 0 & 0 & 1 & -3 & 1 & -\frac{1}{2} & 1 & -\frac{1}{2} \\ 0 & 0 & 0 & 1 & -\frac{1}{2} & 0 & -\frac{1}{2} & 0 \end{array}\right| \cdot(-3) = \left|\begin{array}{cccc|cccc} 1 & 0 & 1 & 0 & 0 & 1 & \frac{1}{2} & 0 \\ 0 & 1 & 0 & 0 & \frac{1}{2} & 0 & -\frac{3}{2} & 0 \\ 0 & 0 & 1 & 0 & -\frac{1}{2} & -\frac{1}{2} & -\frac{3}{2} & -\frac{1}{2} \\ 0 & 0 & 0 & 1 & -\frac{1}{2} & 0 & -\frac{1}{2} & 0 \end{array}\right| \cdot(-1)$$

$$= \left|\begin{array}{cccc|cccc} 1 & 0 & 0 & 0 & \frac{1}{2} & \frac{3}{2} & 1 & \frac{1}{2} \\ 0 & 1 & 0 & 0 & \frac{1}{2} & 0 & -\frac{3}{2} & 0 \\ 0 & 0 & 1 & 0 & -\frac{1}{2} & -\frac{1}{2} & -\frac{3}{2} & -\frac{1}{2} \\ 0 & 0 & 0 & 1 & -\frac{1}{2} & 0 & -\frac{1}{2} & 0 \end{array}\right| \qquad \left|\begin{array}{cccc} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right|$$

$$A \cdot A^{-1} = \begin{bmatrix} 0 & 1 & 0 & -1 \\ 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & 1 \\ -1 & 0 & 1 & 0 \end{bmatrix} \cdot \left|\begin{array}{cccc} \frac{1}{2} & \frac{3}{2} & 1 & \frac{1}{2} \\ \frac{1}{2} & 0 & \frac{3}{2} & 0 \\ -\frac{1}{2} & -\frac{1}{2} & -\frac{3}{2} & -\frac{1}{2} \\ -\frac{1}{2} & 0 & -\frac{1}{2} & 0 \end{array}\right| =$$

1) $0 \cdot \frac{1}{2} + 1 \cdot \frac{1}{2} + 0 \cdot \left(-\frac{1}{2}\right) - 1 \cdot \left(-\frac{1}{2}\right) =$

$= 0 + \frac{1}{2} + \frac{1}{2} = 1$

$0 \cdot \frac{3}{2} + 1 \cdot 0 + 0 \cdot \left(-\frac{1}{2}\right) - 1 \cdot 0 =$

$= 0 + 0 + 0 = 0$

2) $1 \cdot \frac{1}{2} + 0 \cdot \frac{1}{2} + 1 \cdot \left(-\frac{1}{2}\right) + 0 \cdot 0 = \frac{1}{2} - \frac{1}{2} = 0$

$1 \cdot \frac{3}{2} + 0 \cdot 0 + 1 \cdot \left(-\frac{1}{2}\right) + 0 \cdot 0 = \frac{3}{2} - \frac{1}{2} = \frac{2}{2} = 1$

$1 \cdot 1 + 0 \cdot 0 + 1 \cdot (-1) + 0 \cdot 1 = 0$

$1 \cdot \frac{1}{2} + 0 \cdot 0 + 1 \cdot \left(-\frac{1}{2}\right) + 0 \cdot 0 = \frac{1}{2} - \frac{1}{2} = 0$

$0 \cdot 1 + 1 \cdot 0 + 0 \cdot (-1) + 0 \cdot 1 = 0$

$0 \cdot \frac{1}{2} + 1 \cdot 0 + 0 \cdot \left(-\frac{1}{2}\right) - 1 \cdot 0 = 0$